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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force										Date: May 2017		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0207455F I Three Dimensional Long-Range Radar (3DELRR)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	91.723	7.865	49.491	10.645	0.000	10.645	13.729	24.828	0.259	0.266	0.000	198.806
646002: Three Dimensional Expeditionary Long Range Radar	91.723	7.865	49.491	10.645	0.000	10.645	13.729	24.828	0.259	0.266	0.000	198.806
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 393												
A. Mission Description and Budget Item Justification												
Mission Description: The Three-Dimensional Expeditionary Long-Range Radar (3DELRR) will be the principal USAF long-range, ground-based sensor for detecting, identifying, tracking and reporting aerial tracks for the Joint Force Air Component Commander through the Theater Air Control System. The 3DELRR system will provide multiple benefits and increased capabilities to the USAF and to the joint Services: 1) Replace the aging USAF AN/TPS-75 radar system, which is at the end of its service life and costly to maintain; 2) Detect and track highly maneuverable, small radar cross section air-breathing targets; 3) Mitigate reliability, operational availability, maintainability, transportability and sustainability issues, which plague the AN/TPS-75 radar system; 4) Enable greater battlefield and battlespace awareness through its precise, real-time air picture of sufficient quality to control individual aircraft under a wide range of environmental and operational conditions; 5) Serve as a pilot program for Defense Exportability Features to maximize early in the design phase export potential while reducing 3DELRR life cycle costs through increased production; and 6) Provide exchange of information to the Marine Corps (Navy) via the Composite Tracking Network interface and to the Army via the Integrated Fire Control Network interface.												
Note: This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.												

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B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Previous President's Budget	8.139	49.491	50.614	0.000	50.614	
Current President's Budget	7.865	49.491	10.645	0.000	10.645	
Total Adjustments	-0.274	0.000	-39.969	0.000	-39.969	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	-0.274	0.000				
• Other Adjustments	0.000	0.000	-39.969	0.000	-39.969	
Change Summary Explanation						
- FY18 \$39.969M due to Engineering and Manufacturing Development contract delays as a result of protests						
The start of Engineering and Manufacturing Development (EMD) has been delayed due to contractor protests and continued source selection activities. The Air Force plans to award its EMD prime contract mid 3QFY17.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2016	FY 2017	FY 2018
Title: Contractor Engineering and Manufacturing Development (EMD)				0.000	40.367	0.000
Description: Contractor's portion of EMD efforts contribute to the overall development of 3DELRR capabilities.						
FY 2016 Accomplishments:						
- Activities included studies, analyses, and risk mitigation to support program planning and execution						
FY 2017 Plans:						
Activities include but are not limited to the following:						
Conduct program management and systems engineering activities to kick off and begin executing the EMD Phase of 3DELRR:						
- Start EMD prime contract and clarify requirements through Post Award Conference						
- Establish joint teams through Acquisition Program Transition Workshop						
- Execute Delta Preliminary Design Review (PDR) and Engineering Design Readiness Review (EDRR)						
- Clarify Critical Design Review requirements & criteria						
- Conduct Program Management Reviews						

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
- Begin contractor test planning and preparation FY 2018 Plans: Activities will include but are not limited to the following: Conduct program management and systems engineering activities to continue execution of Engineering and Manufacturing Development (EMD) Phase of 3DELRR: - Mature system design through successful Critical Design Review (CDR) - Conduct Integrated Baseline Review (IBR) - Continue contractor developmental test planning and preparation - Start build of three (3) EMD production ready units; fabricate components & subsystems - Start contractor developmental testing of components & subsystems - Conduct initial physical configuration audit - Support studies and analysis to assess future capabilities				
Title: Government Developmental Test and Evaluation (DT and E) Planning/Preparation Description: Early planning/preparation postures Government DT&E, which will begin in FY19. FY 2016 Accomplishments: T&E activities included, but were not limited to: - Developed the test strategy and test related documentation - Planned developmental test and evaluation events as well as cyber-security planning - Participated in technical and test related working groups FY 2017 Plans: Activities include but are not limited to the following: - Provide test expertise and support at Delta Preliminary Design Review (PDR) and Engineering Design Readiness Review (EDRR) - Develop and refine Test Evaluation Master Plan (TEMP) and other test planning documentation - Contribute to technical interchanges and test-related working groups - Begin detailed test planning such as design of experiments and integration of cyber-security FY 2018 Plans: Activities will include but are not limited to the following: - Provide test expertise and support at CDR and IBR - Continue development and refinement of TEMP and other test planning documentation - Conduct site-surveys and continue cyber-security planning		0.480	0.676	1.681

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C. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018
- Monitor and evaluate contractor developmental testing; tailor lessons for Government DT&E - Contribute to technical interchanges and test-related working groups - NOTE: Training and travel ramp up this FY in preparation for Government DT&E start in FY19											
Title: Program Management/Systems Engineering/Technical Support									7.385	8.448	8.964
Description: Efforts provide management, engineering and technical support to the program office.											
FY 2016 Accomplishments: - Activities included analyses and planning for future execution to include, but were not limited to, modeling and simulation, information assurance, program protection, and cyber-security											
FY 2017 Plans: - Begin Engineering and Manufacturing Development (EMD) efforts to further mature technology readiness and manufacturing capabilities - Lead and manage program through daily interaction with contractor and key stakeholders - Oversee programmatic, design and technical reviews, e.g., Delta Preliminary Design Review (PDR), Engineering Design Readiness Review (EDRR), etc. - Manage, analyze and process contract data requirements for cost, schedule and performance - Identify, monitor and mitigate program and technical risks; facilitate program office reporting											
FY 2018 Plans: - Continue EMD efforts to further mature technology readiness and manufacturing capabilities - Lead and manage program through daily interaction with contractor and key stakeholders - Oversee programmatic, design and technical reviews, e.g., Critical Design Review (CDR), Integrated Baseline Review (IBR), program reviews, etc. - Monitor reliability growth during contractor component, subsystem and system level testing - Identify, monitor and mitigate program and technical risks; facilitate program office reporting											
Accomplishments/Planned Programs Subtotals									7.865	49.491	10.645
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPAF: BA03: Line Item # 833060: 3D Expeditionary Long Range-Radar	0.000	0.000	0.000	0.000	0.000	10.099	118.109	128.734	139.768	722.690	1,119.400

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D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Remarks											
Given contractor protests, continued source selection and the expected award of the EMD prime contract in mid 3QFY17, the Air Force will reassess the timing of its OPAF funding requirement during the FY19 PB process.											
E. Acquisition Strategy											
The 3DELRR strategy is a single step acquisition approach for full capability to develop, produce and field a highly capable and sustainable, expeditionary long-range radar. A limited competition was conducted among the multiple contractors that participated in two Pre-EMD (or Technology Maturation and Risk Reduction) phases. The EMD contract will be awarded mid 3QFY17 to a single developer to complete the final design, build, integration and test of the 3DELRR system—with options to produce Low Rate Initial Production (LRIP) units, conduct Interim Contractor Support (ICS) and Full Rate Production (FRP).											
The primary contract type for EMD is a Fixed Price Incentive Firm (FPIF). The contract also includes a FPIF option to execute LRIP, Cost Plus Fixed Fee (CPFF) options for ICS and Firm Fixed Price (FFP) options for FRP. A CPFF option is planned for ICS due to the uncertainty of the quantity and the exact nature of the work. An FFP option is planned for FRP due to stable requirements and low risk of changes in scope. The program office will exercise the LRIP option upon Milestone Decision Authority (MDA) approval at MS C. The program office will also seek MDA approval to exercise ICS options (as necessary) and FRP options.											
The EMD prime contractor will deliver three (3) EMD units, which will be the primary assets used for contractor, Government, developmental and operational testing. The LRIP option provides scope for the retrofit of these three (3) EMD units to production quality specifications, plus it enables the delivery of three (3) additional production quality units for a total of six (6) units at Initial Operational Capability (IOC). The FRP options will deliver an additional twenty-nine (29) units for a total of thirty-five (35) units at Full Operational Capability (FOC).											
The MDA for the 3DELRR program is the Under Secretary of Defense for Acquisition, Technology and Logistics [USD (AT&L)]. The Air Force Program Executive Officer (PEO) for Battle Management (AFPEO BM) located at Hanscom AFB, MA is the PEO for 3DELRR. The Air Force Life Cycle Management Center (AFLCMC) located at Wright-Patterson AFB, OH is the contracting authority for the 3DELRR program, as AFLCMC provides contracting, legal, comptroller, programmatic, engineering, test and logistics support.											
F. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force												Date: May 2017			
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0207455F / Three Dimensional Long-Range Radar (3DELRR)				Project (Number/Name) 646002 / Three Dimensional Expeditionary Long Range Radar					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EMD Phase (Prime Contract)	C/FPIF	Pending Source Selection : TBD	72.659	0.000		40.367	May 2017	0.000	Oct 2017	0.000		0.000	10.991	124.017	265.000
Subtotal			72.659	0.000		40.367		0.000		0.000		0.000	10.991	124.017	265.000
Remarks															
- Program delayed due to protests and continued source selection; projected contract award mid 3QFY17															
- Target value of EMD prime contract is based on the most current Program Office Estimate															
- FINANCIAL PERFORMANCE: 3DELRR is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the 3DELRR EMD contract is a FPIF contract with progress payments. 20 percent of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering - A	SS/CPFF	MIT/Lincoln Laboratory : Lexington, MA	3.380	1.607	Nov 2015	1.900	Nov 2016	1.600	Nov 2017	0.000		1.600	1.396	9.883	-
System Engineering - B	SS/CPFF	Carnegie Mellon University : Pittsburgh, PA	0.269	0.000	Oct 2015	0.150	Oct 2016	0.150	Oct 2017	0.000		0.150	0.000	0.569	-
System Engineering - C	SS/CPFF	GTRI : Atlanta, GA	0.000	0.725	Feb 2017	0.725	May 2017	0.725	Dec 2017	0.000		0.725	1.850	4.025	-
System Engineering - D	SS/CPFF	MITRE : Bedford, MA	0.000	2.758	Oct 2015	1.867	Oct 2016	3.080	Oct 2017	0.000		3.080	4.276	11.981	-
Subtotal			3.649	5.090		4.642		5.555		0.000		5.555	7.522	26.458	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Developmental Test and	PO	46 TS : Eglin AFB, FL	1.262	0.240	Feb 2016	0.676	Oct 2016	1.681	Oct 2017	0.000		1.681	13.915	17.774	-

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Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Evaluation Planning and Preparation															
Subtotal			1.262	0.240		0.676		1.681		0.000		1.681	13.915	17.774	-
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration	Various	AFLCMC/HBDD : Hanscom AFB, MA	14.153	2.535	Oct 2015	3.806	Oct 2016	3.409	Oct 2017	0.000		3.409	6.654	30.557	-
Subtotal			14.153	2.535		3.806		3.409		0.000		3.409	6.654	30.557	-
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			91.723	7.865		49.491		10.645		0.000		10.645	39.082	198.806	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity

3600 / 4

R-1 Program Element (Number/Name)

PE 0207455F / Three Dimensional Long-Range Radar (3DELRR)

Project (Number/Name)

646002 / Three Dimensional Expeditionary Long Range Radar

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EMD Contract Award																												
Government DT&E Planning/Preparation																												
EMD																												
Critical Design Review (CDR) (October 2017)																												
Contractor Test																												
Developmental Test and Evaluation Test Readiness Review (July 2019)																												
Government Development Test																												
EMD Unit Delivery																												
Operational Test Readiness Review (OTRR) (December 2020)																												
Milestone C (January 2021)																												
Government Operational Test																												
Low Rate Initial Production (LRIP)																												
Full Rate Production (FRP) Decision (March 2022)																												
Full Rate Production																												

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i>	Project (Number/Name) 646002 / <i>Three Dimensional Expeditionary Long Range Radar</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMD Contract Award	3	2017	3	2017
Government DT&E Planning/Preparation	3	2017	4	2019
EMD	3	2017	2	2021
Critical Design Review (CDR) (October 2017)	1	2018	1	2018
Contractor Test	2	2018	3	2019
Developmental Test and Evaluation Test Readiness Review (July 2019)	4	2019	4	2019
Government Development Test	4	2019	4	2020
EMD Unit Delivery	4	2019	4	2019
Operational Test Readiness Review (OTRR) (December 2020)	1	2021	1	2021
Milestone C (January 2021)	2	2021	2	2021
Government Operational Test	2	2021	1	2022
Low Rate Initial Production (LRIP)	2	2021	4	2022
Full Rate Production (FRP) Decision (March 2022)	2	2022	2	2022
Full Rate Production	2	2022	4	2022